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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/813,168	03/31/2004	Michael M. Albert	1857.2390000/MVM/CMB	4453
26111	7590	07/12/2005	EXAMINER	
STERNE, KESSLER, GOLDSTEIN & FOX PLLC 1100 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			CONSILVIO, MARK J	
			ART UNIT	PAPER NUMBER
			2872	

DATE MAILED: 07/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/813,168

Applicant(s)

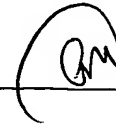
ALBERT ET AL.

Examiner

Mark Consilvio

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/8/2004</u> . | 6) <input type="checkbox"/> Other: ____. |

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DETAILED ACTION

Information Disclosure Statement

The information disclosure statement (IDS) submitted on 11/08/2004 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the illuminator and pupil of claim 26 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet"

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pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 12-16 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear how the polarizer can comprise a source of UV light since the light source and polarizer are clearly separate elements. Therefore, the scope of the claims are indefinite since the metes and bounds of the limitations cannot be determined.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 7, 11, 17, 18, 22, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Rotter et al. (US Patent Application No. 2002/0191185) (herein Rotter).

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With respect to claim 1, Rotter discloses a patterned grid polarizer comprising: (a) a substrate that is transparent to ultraviolet (UV) light; and (b) an array of elements patterned on the substrate, wherein the elements polarize UV light (pars. 16 and 17).

With respect to claim 7, Rotter discloses the elements have a pitch of between about one tenth of a wavelength of the UV light and twice the wavelength of the UV light (par. 55).

With respect to claim 11, Rotter discloses The polarizer of claim 1, wherein the elements include aluminum, silver or gold (par. 17).

With respect to claim 17, Rotter discloses the substrate is fused silica, calcium fluoride, sapphire, quartz or magnesium fluoride (par. 17).

With respect to claim 18, Rotter discloses an apparatus (600) for polarizing UV light comprising: (a) a source (610) producing a light beam having at least one wavelength within the UV spectrum; (b) a substrate transparent to light in the UV spectrum and disposed in a path of the light beam; and (c) an array of elements on the substrate; wherein the array of elements polarize incident UV light and output a polarized outgoing light (par. 16 and 17 and fig. 5).

With respect to claim 22, Rotter discloses the substrate includes fused silica, calcium fluoride, or sapphire (par. 17).

With respect to claim 23, Rotter discloses the elements generally reflect most incident light of a first polarization direction and transmit most of the light of a second polarization direction (par. 34).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-6, 8-10, 19-21, and 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shuster (US Patent Application No. 2002/0176166) in view of Rotter et al. (US Patent Application No. 2002/0191185) and in further view of Huebner et al. (German Patent No. 19621512).

With respect to claims 26, and 27, Shuster discloses an apparatus for lithography for polarizing UV light comprising: a source (52) producing a light beam having at least one wavelength within the UV spectrum; a polarizer (63) disposed in a path of the light beam, transparent to ultraviolet (UV) light, and having an array of elements patterned that polarize UV light; projection optics/illuminator (54); wherein the polarizer produces a pattern of polarization in the UV light output toward the projection optics/pupil. Shuster does not expressly disclose that the polarizer is a wire grid polarizer with an array of elements on a substrate transparent to light in the UV spectrum. However, Rotter as stated supra discloses or suggests all the limitations of claims 1 and 18. Further, Rotter teaches that a wire grid polarizer on a UV transparent substrate may be used in replacement of a birefringent polarizer for a variety of advantages such as a reduced sensitivity to angular dependence. In order to function properly in the device disclosed by Shuster, the grid elements would need to be arranged such that they produced the same desired pattern (i.e. radial and tangential polarization). As Rotter teaches the

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wire grids will transmit only the polarization perpendicular to the grid. Thus, the grids could be arranged as taught by Huebner et al. in figs. 9 and 10 to produce the desired pattern. Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Shuster, Rotter, and Huebner et al. to replace the polarizing element of Shuster with a wire grid polarizer having a pattern as taught by Huebner. One of ordinary skill in the art would have been motivated to do this for the advantages of a wire grid polarizer including a reduced sensitivity to UV absorption, thermal stresses, and angular dependence.

With respect to claims 2 and 24, the combination as set forth supra teaches the elements are radially patterned to produce tangentially polarized outgoing light from unpolarized incoming light, wherein the incoming light is incident upon the polarizer and outgoing light exits the polarizer (Huebner fig. 10).

With respect to claims 3 and 25, the combination as set forth supra teaches the elements are concentrically patterned to produce radially polarized outgoing light from unpolarized incoming light, wherein the incoming light is incident upon the polarizer and outgoing light exits the polarizer (Huebner fig. 9).

With respect to claim 4, the combination as set forth supra teaches the elements are patterned in a plurality of groups, wherein the groups are arranged in a circular pattern and each group is comprised of parallel elements, wherein the elements of one group are not parallel to the elements of a second group (Huebner fig. 11).

With respect to claim 5, the combination as set forth supra teaches the elements are circular (Huebner fig. 9).

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With respect to claim 6, the combination as set forth supra teaches the elements are patterned in concentric circles (Huebner fig. 10).

With respect to claims 8-10 and 19-21, the combination as set forth supra does not expressly disclose the pitch, period, or thickness of the elements. However, one of ordinary skill would understand that a pitch of about one quarter of a wavelength of the UV light is desirable so that higher orders of diffraction are not created by the wire grid polarizer. Likewise, a period of between about 45 nm and 95 nm and a thickness of between approximately 0.04 and 0.3 μm would be required for system making use of ultraviolet light. Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Shuster, Rotter, and Huebner et al. to provide the required features for use in the lithographic system as taught by Shuster.

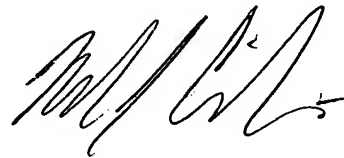
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Consilvio whose telephone number is (571) 272-2453. The examiner can normally be reached on Monday thru Friday, 8:30 am to 5:00 pm.

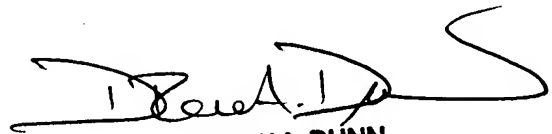
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on (571) 272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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